State Of California The Resources Agency of California

Memorandum

Date: June 17, 2010
Telephone: (916) 654-4781
File: 09-AFC-5

DOCKET
09-AFC-5
DATE JUN 17 2010
RECD JUN 17 2010

To: Commissioner Anthony Eggert, Presiding Member
Vice Chair James Boyd, Associate Member
Kourtney Vaccaro, Hearing Officer

From: California Energy Commission - **Craig Hoffman**
1516 Ninth Street **Siting Project Manager**
Sacramento, CA 95814-5512

Subject: **ABENGOA MOJAVE SOLAR 09-AFC-5**

ENERGY COMMISSION STAFF'S REBUTTAL TESTIMONY TO THE APPLICANT'S OPENING TESTIMONY

Energy Commission staff is providing rebuttal testimony to the Applicant's opening testimony and proposed modifications to Conditions of Certification in the following technical sections: Biological Resources, Hazardous Materials, Noise and Vibration, Soils and Water Resources, Traffic and Transportation, Visual Resources, Waste Management and Worker Safety.

cc: Proof of Service List
Docket 09-AFC-5

PROOF OF SERVICE (REVISED 6/8/10) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 6/17/10
HA

BIOLOGICAL RESOURCES

Testimony of Heather Blair

Energy Commission compliance staff is committed to timely review of Abengoa Mojave Solar (AMS) project plans and information and has shortened Verification timelines as much as possible to benefit the project schedule. However, it will be difficult for staff to complete a timely review if all project information is submitted at once; therefore, staff requests that the applicant be mindful of staff workload constraints and stagger submittal of information to the extent possible, so that each submittal can receive staff's immediate attention.

The applicant proposed several modifications to the Verification of certain conditions of certification, which are intended to provide flexibility in the project schedule or define Compliance Project Manager (CPM) review timeframes. Staff is not opposed to the applicant's proposed modifications to conditions of certification **BIO-3**, **BIO-5**, and **BIO-17**. The agreed-upon language for each condition is presented below.

BIO-3 (Biological Monitor Selection, Qualifications, and Duties)

> **Verification:** The project owner shall submit the specified information to the CPM, CDFG, and USFWS for approval at least 60 days prior to the start of any pre-construction site mobilization**, and concurrent with the submittal of information required for the Designated Biologist approval process outlined in BIO-1**. The CPM, CDFG, and USFWS have 30 days to approve or deny proposed Biological Monitor(s)…

BIO-5 (Worker Environmental Awareness Program)

> **Verification:** At least 45 days prior to the start of any pre-construction site mobilization, the project owner shall provide to the CPM the proposed WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.
>
> **The CPM shall review and provide written comments within 15 days of receipt of the WEAP.**
>
> The project owner shall provide in the Monthly Compliance Report…

BIO-17 (Monitoring Impacts of Solar Technology on Birds)

> **Verification:** At least 60 days prior to any construction-related ground disturbance, the project owner shall submit to the CPM, USFWS, and CDFG a draft Bird Monitoring Study. **The CPM shall review and provide written comments within 15 days of receipt of the Bird Monitoring Study.** At least 30 days prior to start of any construction-related ground disturbance activities, the project owner shall provide the CPM with the final version of the Bird Monitoring Plan that has been reviewed and approved by the CPM, in consultation with CDFG and USFWS.

All modifications to the Bird Monitoring Study shall be made only after approval from the CPM…

The Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP; Condition of Certification **BIO-6**) encompasses all avoidance, minimization and mitigation measures as well as permit requirements. It is an integral document to effective implementation of the biological resource conditions of certification and requires coordination with and review by the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). As such, the required review time cannot realistically be fewer than 30 days. Every effort will be made to complete the BRMIMP review as quickly as possible and it is not anticipated that the proposed 30-day timeframe will negatively impact the project schedule.

The applicant also proposed modifications to conditions of certification **BIO-18** and **BIO-19** with the intention of streamlining the review cycles. A draft Raven Management Plan, per Condition of Certification **BIO-18**, was submitted by the applicant in December 2009 and comments were provided by staff, CDFG, and USFWS to the applicant in March 2010. Staff needs to review the final Raven Management Plan to confirm that all agency comments were addressed, as appropriate. Therefore, staff cannot accept the applicant's proposed modification, which would remove this confirmation step. However, staff reduced the final plan deadline and CPM review/confirmation time in an effort to benefit the project schedule.

> **Verification:** At least ~~45~~**30** days prior to start of any construction-related ground disturbance activities, the project owner shall provide the CPM, USFWS, and CDFG with the final version of the Raven Management Plan that has been reviewed and approved by USFWS and CDFG. The CPM shall determine the plan's acceptability within ~~15~~ **10** days of receipt of the final plan. All modifications to the approved Raven Management Plan must be made only after consultation with the Energy Commission staff, USFWS, and CDFG. The project owner shall notify the CPM no less than five working days before implementing any CPM-approved modifications to the Raven Plan.

In contrast to the Raven Management Plan (**BIO-18**), the Evaporation Pond Plan needs an additional round of review. The applicant submitted a draft Evaporation Pond Plan in December 2009. However, substantial revisions to the draft plan are warranted to achieve consistency with the parameters developed by staff, CDFG, and USFWS and presented in Condition of Certification **BIO-19**. It would be most efficient for the CPM, CDFG, Regional Water Quality Control Board (RWQCB), and USFWS to review a revised draft Evaporation Pond Plan instead of providing comments on the outdated December 2009 version. Therefore, staff cannot accept the applicant's proposed modification, but has revised the Verification of **BIO-19** to clarify the review process. In addition, timeframes have been reduced to benefit the project schedule.

> **Verification:** At least ~~120~~ 30 days prior to operation of the evaporation ponds, the project owner shall provide the CPM, USFWS, RWQCB, and CDFG with the

final version of the Plan that has been reviewed and approved by the CPM in consultation with USFWS, RWQCB, and CDFG. **The project owner shall first submit a draft plan to the CPM that incorporates the guidance in this condition. The CPM, in coordination with USFWS, RWQCB, and CDFG, shall provide written comments to the project owner within 30 days of receipt of the draft plan and shall determine the acceptability of the final plan within 15 days of its receipt.** ~~The CPM will determine the draft plan's acceptability within 60 days of receipt of the final plan.~~ All modifications to the approved Plan may be made by the CPM after consultation with USFWS, RWQCB, and CDFG. The project owner shall notify the CPM no less than five working days before implementing any CPM-approved modifications to the Evaporation Pond Plan.

The applicant proposed deletion of conditions of certification **BIO-8** (Rare Plant Pre-Construction Surveys and Impact Avoidance) and **BIO-9** (Rehabilitation of Temporarily Disturbed Areas), which would require pre-construction surveys for rare plants and restoration of temporarily disturbed areas. However, these conditions were already deleted, as presented in the RSA. The conditions of certification in the RSA were renumbered accordingly. No change is warranted

HAZARDOUS MATERIALS

Testimony of Alvin Greenberg, Ph.D.

The applicant has proposed in written pre-filed testimony that staff's proposed Condition of Certification **HAZ-6** be deleted in its entirety. The applicant makes this suggested deletion because the Abengoa Mojave Solar (AMS) project is not subject to federal security requirements of the U.S Department of Homeland Security Chemical Facility Anti-Terrorism Standards (CFATS, 6 CFR Part 27).

Staff adamantly opposes this proposal to eliminate **HAZ-6** in its entirety. It is staff's position that the extremely large amounts of hazardous materials that will be stored and used at the project, mainly 2.3 million gallons of extremely flammable heat transfer fluid, warrant the requirement for adequate security measures to reduce the threat posed by sabotage or attack.

There is also the issue of solar power generation reliability. Staff believes that maintaining the security of all solar power plants will serve to ensure solar generation reliability and help achieve the state's goal of producing more energy from renewable sources. The goal of **HAZ-6** is to ensure provision of the minimum level of security for power plants needed to protect California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The security measures proposed are not onerous and include standard methods such as perimeter fencing, a limited requirement for Closed Caption Televisions, alarms, site access procedures for employees and vendors, site personnel background checks, law enforcement contact in the event of a security breach, and the use of guards or staff on-site 24/7.

The energy generation sector is one of 14 areas of critical Infrastructure listed by the U.S. Department of Homeland Security (US DHS). As such, the U.S. DHS designated the U.S. Department of Energy (DOE) as the lead federal agency in charge of developing and ensuring implementation of security for the energy sector. The DOE designated the North American Electric Reliability Corporation (NERC) as the lead group to develop Critical Infrastructure Protection standards. The NERC published *Security Guidelines for the Electricity Sector* in 2002 as well as issued a *Critical Infrastructure Protection* standard for cyber security in December 2009. The DOE also published a draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002. As can be seen from these documents, the federal government takes energy security very seriously. Although the proposed AMS facility would not be subject to the federal CFATS regulation mentioned above, staff believes that the Energy Commission has the authority and responsibility to require power plant security under a general obligation to ensure protection of public health and safety. Thus, since 2003, all new power plants licensed by the Energy Commission have been required to implement a minimum level of security consistent with the guidelines listed above. No applicants have made the suggestion of deleting this Condition until now.

NOISE AND VIBRATION

Testimony of Shahab Khoshmashrab

Staff is not opposed to the language refinements made to **Noise 2, Noise 4** and **Noise 7.** The modifications to **Noise 2** and **Noise 7** are refinements and clarifications and do not change the intent of the condition.

Staff proposes to add the definition of *legitimate Noise Complaint* to Condition of Certification **NOISE-2.** This definition is the standard language used by staff in previous projects.

Staff agrees with the new noise level limits proposed by the applicant in Condition of Certification **NOISE-4** because with the new limits, the project would still comply with the local noise LORS and would still create less-than-significant impacts. The increases at the project receptors would be no more than 5 dBA at night and would be 4-9 dBA during the daytime. Note that the CEC criteria used for the daytime and nighttime are different. Staff typically limits nighttime project-plus-ambient noise level to no more than 5 dBA above the existing nighttime ambient level because at night people are trying to sleep, while an increase of 5-10 dBA in the daytime ambient levels resulting from a project are typically considered less than significant

Modified refinements made to **NOISE-2, NOISE-4** and **NOISE-7**:

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all **legitimate** [1] project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise in the complaint;
- If the noise is **legitimate** project related, take all feasible measures to reduce the source of the noise; and
- Submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

[1] A legitimate complaint refers to a complaint about noise that is confirmed by the CPM to be disturbing, and that is caused by the AMS project as opposed to another source (as verified by the CPM). A legitimate complaint constitutes a violation by the project of any noise condition of certification (as confirmed by the CPM), which is documented by an individual or entity affected by such noise.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the daylight hours (when the project is capable of producing electricity), to exceed an average of **55** ~~53~~ dBA measured at or near monitoring location LT-1 (15563 Edie Road), an average of **43** ~~40~~ dBA measured at or near monitoring location LT-2 (41234 Harper Lake Road), an average of **55** ~~52~~ dBA measured at or near monitoring location ST-1 (15635 Lockhart Road), and an average of **49** ~~46~~ dBA measured at or near monitoring location ST-2 (15654 Roy Road).

Also, the project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the four quietest consecutive hours of the nighttime, to exceed an average of **24** ~~22~~ dBA measured at or near monitoring location LT-1 (15563 Edie Road), an average of **30** ~~7~~ dBA measured at or near monitoring location LT-2 (41234 Harper Lake Road), an average of **24** ~~21~~ dBA measured at or near monitoring location ST-1 (15635 Lockhart Road), and an average of **24** ~~15~~ dBA measured at or near monitoring location ST-2 (15654 Roy Road). All noise limitations contained in this condition of certification are independent of ambient levels. The limitations are placed on noise created by the project plant operation alone. No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. When the project first achieves a sustained output of 90% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location LT-1, or at a closer location acceptable to the CPM. This survey shall be conducted during a windy day **to be representative of the normal daytime environment in the project area**. This survey during the power plant's full-load operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

   During the period of this survey, the project owner shall conduct a shortterm survey of noise at each of the monitoring locations LT-2, ST-1, and ST-2, or at closer locations acceptable to the CPM. The short-term noise measurements at these locations shall be conducted during the daylight hours and again during the nighttime hours of 10:00 p.m. to 7:00 a.m.

The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values during the above specified period(s) of time, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within **90** ~~30~~ days of the project first achieving a sustained output of 90% or greater of rated capacity. Within **30** ~~15~~ days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within **30** ~~15~~ days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-7 If a traditional, high-pressure steam blow process is used, the project owner shall monitor steam blow noise at the closest receptors, LT-1**, ST-2,** and ST-1, to ensure the noise of steam blows does not exceed 60 dBA at these locations. If this noise level is unattainable, the project owner shall either relocate the residents for the duration of steam blows to a location further away from these activities, or equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 60 dBA**,** measured at LT-1**, and** ST-2**, and ST-1**. The steam blows shall be conducted between 7:00 a.m. and 7:00 p.m. unless arranged with the CPM such that offsite impacts would not cause annoyance to noise receptors. If a low-pressure, continuous steam blow process is used, the project owner shall submit to the CPM a description of the process, with expected noise levels and planned hours of steam blow operation.

Verification: At least 15 days prior to the first steam blow, the project owner shall notify all residents and business owners within two miles of the project site. The

notification may be in the form of letters, phone calls, fliers, or other effective means as approved by the CPM. The notification shall include a description of the purpose and nature of the steam blow(s), the planned schedule, expected sound levels, and explanation that it is a one-time activity and not part of normal plant operation. **During steam blow activities, noise levels will be monitored at receptor locations LT-1, ST-1, and ST-2 and the results reported to the CPM.**

SOILS AND WATER RESOURCES

Testimony of Christopher Dennis, P.G., John Fio, Gus Yates, P.G., C.H.g., and Mike Conway

Proposed AMS Project Cooling Technology. Part of the SSA *Water Use LORS and State Policy and Guidance* section discusses the AMS project's proposed groundwater use in comparison to the groundwater use by existing and currently proposed solar projects in California. Of the solar projects currently proposed, four propose to use solar radiation concentrating technology (solar trough) similar to that proposed for the AMS project. However, three of these projects (Palen, Blythe, and Ridgecrest) would be air-cooled rather than wet-cooled as proposed by the AMS project. The fourth project (Beacon) will be using reclaimed water rather than surface or ground water.

The applicant disagrees with staff that the AMS project's groundwater use for the technology proposed would be inefficient or necessarily require 3.6 acre-feet per gigawatt (GW) hour generated. The applicant states the groundwater demand would likely average 2.62 acre-feet/GW hour. In response, staff believes that an air-cooled system would use groundwater resources in the arid desert much more efficiently than the groundwater-cooled system proposed by the applicant. However, staff has not identified significant groundwater impacts that would be related to the AMS project's use of groundwater. While staff believes the proposed project would not significantly impact groundwater resources, staff does believe that the proposed project's use of groundwater does not comply with the state's water conservation policies.

Further, staff agrees with the applicant's testimony that the groundwater demand would likely be an average of 2.62 acre-feet/GW hour. However, as stated in the applicant's testimony, there may be conditions that could necessitate the need for more groundwater than the average estimate, such as higher total dissolved solids (TDS) concentrations in the groundwater. In addition, the applicant stated in the AFC and in their testimony that the AMS project's maximum groundwater requirement would be 2,160 acre-feet per year (AF/y), or 3.6 acre-feet/GW hour at the proposed rate of operation. For reasons such as this, staff conservatively analyzed the AMS project as proposed and, as it deems reasonable and prudent, assuming that the maximum water requirement as estimated by the applicant would be used.

As part of the applicant's testimony regarding efficiency of groundwater use by the proposed AMS project, the applicant presented data intended to capture average operating conditions at the SEGS VIII and IX plants. However, the data used by the applicant is 8 to 11 years old and may not be representative of current operation conditions. Staff used the most recent data available (last year's) in the SSA and believes this data is more representative of current operating conditions at the SEGS VIII and IX plants.

In-Lieu Permitting Authority. Condition of Certification **SOIL&WATER-10** requires the project owner to obtain a Domestic Water Supply Permit. The applicant agrees with this condition of certification but believes permitting authority rests with the Energy

Commission under Public Resources Code section 25500. However, the California Department of Public Health (DPH) is the only California state agency that has received U.S. EPA approval for primary enforcement responsibility of the Safe Drinking Water Act, having met federal criteria specified in federal regulations; the Energy Commission has not received U.S. EPA approval. The DPH has delegated their permitting authority for Domestic Water Supply Permits to San Bernardino County for all projects within the county. As such, the Domestic Water Supply Permit is outside of the authority granted to the Energy Commission by Public Resources Code section 25500 and the applicant must obtain the permit directly from the County of San Bernardino.

State Water Policy. The applicant states that the Mojave River Basin adjudication contemplated reasonable and beneficial uses as defined by Article 10, section 2 of the California Constitution when adjudicating the water use rights. It is staff's understanding that the trial court assumed that all pumping in existence at the time of the adjudication was unreasonable when faced with severe overdraft of the interrelated water source and that, for the purposes of the adjudication, the trial court simply assumed all of the Base Annual Production (BAP) water use was reasonable and beneficial, allocated water rights based on the pumping levels in the prior five years, and did not evaluate the reasonableness and beneficial use of each groundwater user within the adjudicated area. Staff believes that the adjudication, while a final judgment on the groundwater use rights of each party subject to the adjudication, was not intended to preclude state agencies from evaluating and making determinations about the reasonableness or the reasonableness of the method of use of individual groundwater users.

Well Yield. Condition of Certification **SOIL&WATER-6** requires mitigation if, due to AMS project pumping, the groundwater yield in an adjacent property's well becomes less than 150 percent of that well's maximum daily demand, dry-season demand, and annual demand. The applicant testified that the threshold should be reduced to 100 percent of the well yield because potential variability in demand would already be captured by evaluation of the well's maximum daily, dry season, and annual demand. To accommodate the applicant's request and still capture variation in water demand, staff recommends replacing the requirement for assessment of the dry season demand with a 5-year average annual demand threshold. A 5-year average annual demand threshold would capture the dry season demand and provide a more representative evaluation of the annual water demand. Condition of Certification **SOIL&WATER-6** as modified by staff to reflect this change is presented below**.**

Base Annual Production (BAP) and Free Production Allowance (FPA). Staff's SSA was based on the applicant's presentation of their BAP and FPA. After publication of the SSA, the applicant submitted opening testimony that re-characterizes Abengoa's BAP allowance from 100 percent industrial to one that allocated as industrial only that BAP necessary to support the proposed project. Staff agrees with the applicant's reevaluation of the BAP and FPA and summarizes how the re-designated BAP translates into FPA in the table below.

Row Number	Abengoa Groundwater Allocation (AF/y)	As Presented in the Supplemental Staff Assessment	Applicant's Testimony and Staff's Revised Analysis*	
1	Base Annual Production (BAP) Original Consumptive Use Designation - Agricultural	10,478	10,478	
2	**BAP Consumptive Use Re-Designation**	**Industrial**	**Industrial**	**Agricultural**
3	BAP After Consumptive Use Adjustment	5,239 = B1 / 2	5,400 = (D4 / 0.8) * 2	5,078 = D1 – D3
4	Free Production Allowance (FPA) After the Existing 20% Adjudication Ramp Down	4,192 = B3 * 0.8	2,160 = D5	4,062.4 = E3 * 0.8
5	Maximum AMS Project FPA Pumping	2,160	2,160	0
6	Required FPA Sequestration	2,160	0	2.160
7	FPA Available for Sequestration	2,032 = B4 – B5	0	4,062.4 = E4
8	Remaining Agricultural FPA	-128 = (B4 – (B5 + B6))	---	1,902.4 = E7 – E6
Column Letter	A	B	D	E

* Developed in consultation with the Mojave Basin Area Watermaster (Record of Conversation dated 6-15-2010, TN 57175 06-15-10 ROC).

As presented in the table above, staff assumed in the SSA that all of the project's BAP would be converted to industrial BAP thereby reducing the BAP by 50 percent and resulting in a 128 AF/y shortfall in available FPA if the project used its maximum water requirement of 2,160 AF/y. Re-designating BAP as industrial for only that volume of groundwater necessary to support the AMS project's maximum annual pumping would leave 1,902 AF/y FPA available for agricultural use. To arrive at this conclusion, it must be assumed that the industrial BAP (5,400 AF/y) is equal to the industrial FPA prior to a 20 percent ramp down (2,160 AF/y divided by 80 percent). The agricultural BAP then is the difference between the original BAP (10,478 AF/y) and the industrial BAP and including a 50 percent consumption factor (2,700 times 2). It should be noted that use of the remaining agricultural FPA (1,902.4 AF/y) for other than for agricultural purposes could require a reevaluation of the BAP consumptive use adjustment provided in the table above.

As a result of the applicant's re-characterization of the BAP, staff has modified Condition of Certification **SOIL&WATER-11** to reflect this re-characterization. Under this re-characterization, the AMS project would have enough FPA to sequester a volume of groundwater equal to 100 percent of the AMS project's proposed maximum groundwater requirement under the existing 20 percent ramp down. However, if a 40 percent ramp down is imposed at some point during the 30-year life of the project, the

AMS project would not have enough FPA to sequester and a 193.2 AF/y shortfall would result. Staff disagrees with the applicant's assumption that an additional FPA ramp down would not occur over the 30-year life of the AMS project and, therefore, recommend retaining Condition of Certification **SOIL&WATER -12** with modifications. This condition together with modifications to Condition of Certification **SOIL&WATER -11** are presented below.

Staff Modified Conditions of Certification **SOIL&WATER-6**, **-11**, and **-12**

SOIL&WATER-6 The project owner shall submit a Groundwater Monitoring and Reporting Plan to the CPM for review and approval. This plan shall consist of two parts as defined by Conditions of Certification **SOIL&WATER-6** and **-7**. **SOIL&WATER-6** describes the requirements for establishing a groundwater well monitoring network and monitoring groundwater levels in that network. **SOIL&WATER-7** describes the requirements for monitoring groundwater quality in the network. Mitigation for impacts related to project induced groundwater level declines or degradation in groundwater quality are provide in each condition of certification. All work and reporting under these conditions of certification shall be conducted under the supervision of a licensed California professional geologist or engineer.

The Groundwater Level Monitoring and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and project operation conditions. The primary objective for the monitoring is to establish a baseline of pre-construction groundwater level trends that can be quantitatively compared against observed and simulated trends near the project pumping wells and near potentially impacted existing wells during project construction and over the life of project operation. The project owner shall:

A. Prior to Project Construction

1. Well Reconnaissance. Conduct a well reconnaissance to investigate and document condition of existing water supply wells within the monitoring area provided access is granted by the well owner). The monitoring area shall be defined by the 20-foot contour of simulated groundwater drawdown induced by AMS project pumping at the end of the project life (as presented in Appendix B Figure Soil and Water 3). Notices shall be sent by registered mail to each well owner identified within monitoring area that provide the following information:
    a. A summary of the proposed project with an explanation of how the groundwater levels are expected to be lowered due to the AMS project groundwater pumping;
    b. An option for the well owner to be provided a copy of the Groundwater Monitoring and Report Plan as approved by the CPM and all reports prepared in compliance with the CPM-approved plan;

c. The project owner's contact name, address, and telephone where the well owner can obtain more information; and

d. The address and telephone number of the Energy Commission.

2. Monitoring Plan. Submit a Groundwater Level Monitoring and Reporting Plan to the CPM for review and approval at least sixty (60) days prior to construction. This plan shall include at a minimum:

   a. The monitoring plan and network of monitoring wells shall make use of two of the four project production wells (once installed), all monitoring wells installed to comply with Waste Discharge Requirements for the evaporation ponds and land treatment unit associated with the project, and the BLM marsh water supply well. In addition, and at least three additional existing wells in the Harper Lake area shall be incorporated into the program. The final well selection shall be based on access being granted by the owners and by BLM and that the wells are deemed by the CPM to be of suitable location and construction to satisfy the requirements for the monitoring program. Some Harper Lake area wells are already monitored, and these wells can be included as part of the network if they meet the objectives of the monitoring program.

   b. A scaled map showing the project site, boundary, location of all wells within the monitoring area, and location of wells selected for the monitoring network. The map shall also include relevant natural (e.g., faults, playa lake, etc.) and man-made features that are existing and proposed as part of the AMS project.

   c. Available well construction information, drilling and well installation methods, and borehole lithology for all wells in the monitoring area.

   d. For monitoring network wells, report the results of a wellhead elevation survey that record: the location and elevation of the well; the location and elevation of the top of the well casing reference point for all water level measurements (the measurement point); and the coordinate system and datum for the survey measurements.

   e. A description of how groundwater measurements will be collected and reported. All groundwater level measurements shall be made to the nearest 1/100 of a foot.

   f. A description of the groundwater level measurements and reporting protocols and quality assurance/quality control plan.

   g. Information about the AMS project wells shall be added to a revised plan submitted to the CPM for review and approval within sixty (60) days after the project wells are installed.

h. A description of the reporting requirements presented below, including a statistical analyses conducted on the data collected, the thresholds employed to determine impact significance, and a description of the mitigation required for significant water level impacts should they occur.

i. A schedule for measuring water levels in all wells in the monitoring network.

j. The plan shall be signed and stamped by a licensed California professional geologist or engineer.

3. Monitoring. Before the start of project construction, collect groundwater levels from all existing wells within the monitoring network, in accordance with the requirements in the Groundwater Level Monitoring and Reporting Plan, to establish pre-construction conditions.

4. Reporting. A report documenting the pre-construction monitoring results shall be submitted to the CPM ~~no less than sixty (60) days~~ after measuring groundwater levels in network wells. At a minimum, the report shall contain: a tabular summary of the network wells; the water level measurements; and dates of the water level measurements; diagrams showing water levels in the wells over time (hydrographs); a map of groundwater elevation contours and calculated gradients; and conclusions regarding groundwater level trends and recommendations for future monitoring and the likelihood of potential interferences to existing wells made by a licensed California professional geologist or engineer.

B. During Construction:

5. Collect groundwater levels within the monitoring network on a quarterly basis throughout the construction period. Perform statistical trend analysis for groundwater levels data **using linear regression or a non-parametric test such as Kendall-Theil Robust Line, or other appropriate statistical analysis.** Assess the significance of apparent trends using appropriate statistical analysis and compare to observed background trends in other monitored wells in the subbasin.

6. **After** ~~Within sixty (60) days of~~ measuring groundwater levels in network wells, submit to the CPM a report of pre-project groundwater levels, present a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and provide a comparison and assessment of water level data relative to the spatial trends simulated by the USGS Mojave River Basin Model (USGS2001). This report shall also contain a tabular summary of the wells, current and historical water level measurements, and dates of water level measurements; a map of the groundwater elevation contours and calculated gradients; and conclusion and

recommendations of a licensed California professional geologist or engineer.

C. During Operation:

7. On a quarterly basis for the first year of operation and semi-annually thereafter for the following four years, collect groundwater level measurements from all wells identified in the groundwater monitoring network. Quarterly operational parameters (i.e., pumping rate and days on which pumping occurred) of the groundwater supply wells shall be monitored.

8. On an annual basis, perform statistical trend analysis **(using linear regression or a non-parametric test such as Kendall-Theil Robust Line, or other appropriate statistical analysis)** on water levels, compare water levels and trends to pre-project conditions, present a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and provide a comparison and assessment of water level data relative to the assumptions and spatial trends simulated by the USGS Mojave River Basin Model (USGS2001). The magnitude and significance of any trends shall be evaluated. Based on comparisons between pre-project, project, and background water level trends, the project owner shall estimate the groundwater level change attributed to project pumping. These calculations shall be supported using a tabular summary of the wells, current and historical water level measurements, a map of the groundwater elevation contours; calculated gradients; and conclusion and recommendations of a licensed California professional geologist or engineer.

D. Mitigation:

9. If groundwater levels have been lowered more than 20 feet below pre-construction levels in an offsite well and monitoring data indicates the water level decline is attributed to project pumping, then the project owner shall assess the impact to the water column above the pump and well screen and related impact to well yield.

10. Mitigation shall be provided to ~~significantly impacted~~ well owners that experience 20 feet or more of project-induced drawdown if well monitoring data confirms project pumping causes all or a portion of the drawdown and either the previously submerged well screen has been exposed or the well yield or performance has been reduced such that the well fails to meet demand. The type and extent of mitigation shall be determined by the amount of water level decline induced by the project, the type of impact, and site specific well construction and water use characteristics. If an impact is determined to be caused by drawdown from more than one source, the level of mitigation provided shall be proportional to the amount of drawdown induced by the project relative to other sources. In order to be eligible, a well owner must

provide documentation of the well location and construction, including pump intake depth, and evidence that the well was constructed in use before project pumping was initiated. The mitigation of impacts shall be determined as follows:

a. Increased Electrical Usage. If project pumping has lowered a well's water levels and increased pumping lifts, increased energy costs shall be calculated. Payment or reimbursement for the increased costs shall be provided at the option of the affected well owner. In the absence of specific electrical use data supplied by the well owner, the following formula shall be used to calculate the additional electrical usage:

Increased Cost for Energy = (change in lift/total hydraulic head) x (total energy consumption times costs/unit of energy)

Where:

change in lift (ft) = calculated change in water level in the well

total hydraulic head (ft) = (elevation head) + (discharge pressure head)

elevation head (ft) = (wellhead discharge pressure gauge elevation) – (water level elevation in well during pumping)

discharge pressure head (ft) = (pressure in pounds per square inch at wellhead discharge gauge) x (2.31 to convert psi to feet of water)

The project owner shall submit to the CPM for review and approval the documentation showing which well owners must be compensated for increased energy costs and that the proposed amount is sufficient compensation to comply with the provisions of this condition.

i. Any reimbursements (either lump sum or annual) to impacted well owners shall be only to those well owners whose wells were in service within six months of the Commission decision and within the 20-foot contour interval established in Item A above.

ii. The project owner shall notify all owners of the impacted wells within one month of the CPM approval of the compensation analysis for increase energy costs.

iii. Compensation shall be provided on either a one-time lump-sum basis, or on an annual basis, as described below.

Annual Compensation. Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

One-Time Lump-Sum Compensation. Compensation provided on a one-time lump-sum basis shall be based on a well-interference analysis, assuming the maximum project-pumping rate of 2,160 AF/y. Compensation associated with increased pumping lift for the life of the project shall be estimated as a lump sum payment as follows:

i. The current cost of energy to the affected party considering time of use or tiers of energy cost applicable to the party's billing of electricity from the utility providing electric service, or a reasonable equivalent if the party independently generates their electricity;

ii. An annual inflation factor for energy cost of 3 percent; and

iii. A net present value determination assuming a term of 30 years and a discount rate of 9 percent;

b. Well Screen Exposure. If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown no longer meet pre-project demand, compensation shall be provided to diagnose and treat ~~and~~ well screen encrustation. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen ~~encrustation~~**fouling**. Should well yield reductions ~~be~~ reoccur~~ring~~, the project owner shall provide payment or reimbursement for either periodic maintenance throughout the life of the project or replacement of the well.

c. Well Yield. If project pumping has lowered water levels to significantly impact well yield so that it can no longer meet its intended purpose, causes the well to go dry, or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at

an amount equal to the customary local cost of deepening the existing well or constructing a new well of comparable design and yield (only deeper). The demand for water, which determines the required well yield, shall be determined on a per well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting ~~150~~ **100** percent of the well owner's maximum daily demand~~, dry-season demand,~~ and **5-year average** annual demand – assuming the pre-project well yield documented by the initial well reconnaissance met or exceeded these yield levels. The contribution of project pumping to observed decreases in observed well yield shall be determined by interpretation of the groundwater monitoring data collected and shall take into consideration the effect of other nearby pumping wells, basin-wide trends, and the condition of the well prior to the commencement of project pumping.

d. The project owner shall notify any owners of the impacted wells within one month of the CPM approval of the compensation analysis.

e. Pump Lowering. In the event that groundwater is lowered as a result of project pumping to an extent where pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. The project shall reimburse the impacted well owner for the costs associated with lowering pumps in proportion to the project's contribution to the lowering of the groundwater table that resulted in the impact.

f. Deepening of Wells. If the groundwater is lowered enough as a result of project pumping that well screens and/or pump intakes are exposed, and pump lowering is not an option, such affected wells shall be deepened or replacement wells constructed. The project shall reimburse the impacted well owner for all costs associated with deepening existing wells or constructing replacement wells in proportion to the project's contribution to the lowering of the water table that resulted in the impact.

E. Monitoring Program Evaluation:

11. After the first five-year operational and monitoring period, and every subsequent 5-year period, the CPM shall evaluate the data and determine if the monitoring program water level measurement frequencies should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected.

Verification: The project owner shall do all of the following:

1. At least sixty (60) days prior to project construction, the project owner shall submit to the CPM, for review and approval, a comprehensive plan (Groundwater Level Monitoring and Reporting Plan) presenting all the data and information required in Item A above. The project owner shall submit to the both the CPM all calculations and assumptions made in development of the plan.
2. During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in Item B above. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
3. No later than sixty (60) days after commencing project operation, the project owner shall provide to the CPM, for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM.
4. During project operation, the project owner shall submit to CPM, applicable quarterly, semi-annual, and annual reports presenting all the data and information required in Item C above. The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports.
5. The project owner shall provide mitigation as described in Item D above, if the CPM's inspection of the monitoring information confirms project-induced changes to water levels and water level trends relative to measured pre-project water levels, and well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site-specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in Item D above.
6. No later than 30 days after CPM approval of the well drawdown analysis, the project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.
7. The project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.
8. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of project operation or, if a lump-sum payment is made, payment shall be made by March 31 of the following year. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.
9. After the first 5-year operational and monitoring period, and every subsequent 5-year period, the project owner shall submit a 5-year monitoring report to the CPM for review and approval. This report shall contain all monitoring data collected and

provide a summary of the findings and a recommendation about whether the frequency of water level measurements should be revised or eliminated.

10. During the life of the project, the project owner shall provide to the CPM all monitoring reports, complaints, studies, and other relevant data within 10 days of being received by the project owner.

SOIL&WATER-10: The Project is subject to the requirement of Title 22, Article 3, Sections 64400.80 through 64445 for a non-transient, non-community water system (serving 25 people or more for more than six months). ~~In addition, the system will require periodic monitoring for various bacteriological, inorganic and organic constituents.~~ **Pursuant to this requirement, the project owner shall obtain a permit from the County of San Bernardino to operate a non-transient, non-community water system.**

Verification: The project owner shall obtain a permit to operate a non-transient, non-community water system with the County of San Bernardino at least sixty (60) days prior to commencement of ~~operations~~**construction** at the site. ~~In addition, the project owner shall submit to the CPM a monitoring and reporting plan for production wells operated as part of the domestic water supply system prior to plant operations. The plan will include reporting requirements including monthly, quarterly, and annual submissions.~~ **The project owner shall supply updates annually for all monitoring requirements and submittals to County of San Bernardino related to the permit, and proof of annual renewal of the operating permit.**
~~The project owner shall designate a California Certified Water Treatment Plant Operator as well as the technical, managerial, and financial requirements as prescribed by State law. The project owner will supply updates on an annual basis of monitoring requirements, any submittals to County of San Bernardino as well and proof of annual renewal of the operating permit.~~

SOIL&WATER-11 As a conservation method, the project owner shall annually sequester a volume of Free Production Allowance (FPA) equal to the annual volume of groundwater pumped for the AMS project. This sequestration is subject to and defined by the following:

- **The project owner shall exercise all option rights indentified in the AFC and thereby acquire groundwater Base Annual Production rights totaling 10,478 AF/y.**
- Sequester means that the project owner shall ~~exercise option rights as identified in the AFC (totaling 10,478 BAP) and~~ retain and refrain from exercising ~~its~~ groundwater FPA use rights which ~~it is~~**the project owner** ~~otherwise lawfully entitled to~~ **could** exercise~~ing~~ under the Mojave Basin Area Adjudication.
- The **project owner shall sequester annually a volume of groundwater equal to that year's volume of groundwater used for the AMS project, up to a** maximum annual volume of ~~groundwater that could be sequestered is 2,032~~**2,160** acre-feet ~~and at no time can be more than the~~

~~difference between the FPA volume and the annual volume of groundwater pumped~~.

- Sequestration shall continue annually for the life of the project owner.
- ~~Sequestered FPA would count towards any additional ramp down that is imposed by the Watermaster pursuant to the Mojave Basin Adjudication.~~
- The annual sequestration of FPA is not intended to affect the Watermaster's implementation of the Mojave Basin **Area** Adjudication.
- Sequestered water would not be considered by the Energy Commission to be produced water subject to any replacement water obligation under the Mojave Basin **Area** Adjudication.

Verification: The volume of FPA sequestered shall be documented in the Annual Compliance Report submitted to the CPM. This documentation shall include a table showing the annual and cumulative total FPA sequestered.

SOIL&WATER-12 As a conservation method, the project owner shall contribute up to $50,000 annually, for the life of the AMS project, towards the Mojave Water Agency's (MWA) turf replacement program, high-efficiency toilet program, or other water conservation program as approved by the CPM. This contribution shall be made the same month each year as established by the first year's contribution.

The ~~AMS~~ project **owner's** contribution to the MWA conservation program shall be ~~in~~ an amount necessary to **conserve groundwater equal in volume to the difference between the annual AMS project's water use and annual groundwater sequestered**. ~~the volume of project water use that is greater than what can be sequestered given the FPA available to the project owner on an annual basis.~~ If the project owner ~~can~~ demonstrates that the annual or cumulative water **sequestered** ~~that is achieved~~ equals or exceeds ~~the~~ project water use ~~in excess of the sequestered FPA~~, then **no contribution to the MWA conservation program is required**. ~~the project owner may reduce or eliminate the contribution of funds~~. Within the $50,000 limit, the project owner shall ensure that the amount contributed to the water conservation program is adjusted on an annual basis to maintain the required amount of water conservation.

If the project owner proposes to change or add water conservation programs that can be funded for the purposes of this condition, a plan must be provided showing which programs are proposed, how much water savings can be achieved, and how much funding is proposed. The plan shall be provided for CPM review and approval in consultation with the Mojave Water Agency prior to the proposed date of change in water conservation programs.

Verification: The project owner shall do the following:

1. The project owner shall submit to the CPM the following documentation as part of the Annual Compliance Report:
    a. A copy of the receipt from the MWA for the annual contribution; and
    b. An accounting of the following:
        i. The annual and cumulative volume of groundwater used by the project in acre-feet per year;
        ii. The annual and cumulative volume of FPA sequestered by the project in acre-feet per year;
        iii. The numerical difference between annual and cumulative totals in Items i and ii above; and
        iv. The annual and cumulative monetary contribution and estimated annual and cumulative volume of water conserved by the project owner's contribution to MWA's turf replacement program, high-efficiency toilet program, or other water conservation program approved by the CPM.
2. If the project owner proposes to reduce the amount of the annual contribution based on the water conservation achieved through previous contributions, the project owner shall provide a plan demonstrating how the adjusted amount will ensure the water conservation program meets the requirements of this condition. The plan shall be provided for CPM review and approval 60 days prior to the annual contribution anniversary date.

TRAFFIC AND TRANSPORTATION

Testimony of Steven J. Brown, PE

The staff assessment provides a condition (**TRANS-4**) that requires the applicant to lengthen the eastbound left-turn pocket on SR-58 at Harper Lake Road. This condition was based upon a calculation using the applicant's provided data regarding the magnitude and direction of project-generated construction traffic.

While this impact will only occur during construction, the implications to public safety are dramatic because the queue of vehicles is expected to greatly exceed the available storage, resulting in vehicles stopped in the through lanes. Given the high speed of traffic (approx 60 MPH), the likelihood of a collision and the resulting severity of injury are both high. Therefore, this is a significant impact, despite being short-term in nature.

The applicant claims that **TRANS-4** is not needed based upon their calculation of queue lengths for the eastbound left-turn from SR-58 to Harper Lake Road. Their calculation makes two overly optimistic assumptions:

1) that 36% of the construction workforce will pass the project site on SR-58 and drive more than 15 miles further east to Barstow to park and be bussed back to the site.
2) that the construction workers will arrive at a metered pace over the course of an entire hour

Only changing the second assumption to represent that workers will arrive in a 15-minute window (attached), results in an estimated vehicle queue of more than 1000', compared to the applicants estimate of 40'. Assuming arrivals over a 30-minute window results in a queue of several hundred feet.

The existing 90'storage length is inadequate to safely accommodate the construction traffic based upon the likely arrival period of construction workers. Therefore, condition **TRANS-4** is necessary and important, in that it requires the applicant to lengthen the turn pocket to Caltrans' satisfaction to safely accommodate the expected queue.

Alternatives to **TRANS-4** that would mitigate the project's impact would be:

- Stagger the start time of employees in 4 equal shifts spaced by at least 30 minutes between shifts, or
- Provide sufficient off-site park and ride capacity to accommodate all construction employees and mandate the use by all employees

For either of the above alternatives, the applicant would be restricted from any construction deliveries from the west during the morning peak period, so as not compromise the available queuing space in the left-turn pocket.

HCM Unsignalized Intersection Capacity Analysis
11: Int

6/9/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	315	500	1	6	526	8	0	0	17	0	1	30
Peak Hour Factor	0.25	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1260	543	1	7	572	9	0	0	18	0	1	33
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	580			545			3396	3657	272	3395	3649	286
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	580			545			3396	3657	272	3395	3649	286
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	0			99			0	0	97	0	0	95
cM capacity (veh/h)	990			1021			0	0	726	0	0	711

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	1260	272	272	1	7	286	286	9	18	34
Volume Left	1260	0	0	0	7	0	0	0	0	0
Volume Right	0	0	0	1	0	0	0	9	18	33
cSH	990	1700	1700	1700	1021	1700	1700	1700	726	0
Volume to Capacity	1.27	0.16	0.16	0.00	0.01	0.17	0.17	0.01	0.03	Err
Queue Length 95th (ft)	1111	0	0	0	0	0	0	0	2	Err
Control Delay (s)	146.7	0.0	0.0	0.0	8.6	0.0	0.0	0.0	10.1	Err
Lane LOS	F				A				B	F
Approach Delay (s)	102.4				0.1				10.1	Err
Approach LOS									B	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

VISUAL RESOURCES

Testimony of Thomas Packard, William Kanemoto and James Jewell

Staff is not opposed to the language refinements made to **VIS-1** and **VIS-4.** The modifications to **VIS-1** and **VIS-4** are refinements and clarifications and do not change the intent of the condition.

Staff is generally not opposed to the applicant's proposed language in **VIS-2**, except for the addition to **VIS-2 B**. The language provided by the applicant takes the responsibility for maintaining off-site landscape screening from the project applicant and places the burden on the property owners. The applicant has to take responsibility for ensuring that the landscaping survives by working with adjacent land owners. Staff would be supportive of the following language:

Modified refinements made to **VIS-1, VIS-2** and **VIS-4**:

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public, **other than surfaces that are intended to direct or reflect sunlight**, so that their colors minimize visual intrusion and contrast by blending with the rural landscape in both color and value and their colors and finishes do not create excessive glare.

The project owner shall submit to the Compliance Project Manager (CPM) for review and approval a specific surface treatment plan that will satisfy these requirements. The treatment plan shall include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

B. A list of each major project structure, building, tank, pipe, wall, and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number or according to a universal designation system;

C. One set of color brochures or color chips showing each proposed color and finish;

D. A specific schedule for completion of the treatment; and

E. A written procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes **for each set** of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval. **The review of any subsequent revisions shall be completed by the CPM within fifteen (15) days of receipt of the revisions.**

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit one set of electronic color photographs from key observation points (KOPs) 1, 2, 3, 4, 5, 6, 7, and 8 analyzed in the Staff Assessment.

The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

VIS-2 The project owner shall develop and implement a plan to reduce permanent views of the project from residential properties located within 0.5 mile of the project boundary by installing off-site landscape planting on the residential properties if the landowner so desires. **and requests implementation of the off-site landscape screening in writing**. The landscape planting shall reduce views of the project and exposure to glare to a reasonable level.

The project owner shall submit to the CPM for review and approval a screening plan providing proper implementation that will satisfy these requirements. The plan shall include:

A. A detailed plan at a reasonable scale such that all information is legible, and elevations and/or section drawings showing the relationship of the screening to the project site. The plan, elevations and/or sections shall clearly demonstrate how the view-reducing ~~reducing~~ requirements stated above shall be met. The plan shall provide a detailed plant list including quantities and sizes of materials to be used and an installation schedule demonstrating installation of as much of the screening as early in the construction process as is feasible in coordination with project construction. **Landscaping should include native species that are drought tolerant and not modify or provide for habitat for predator species such as ravens;**

B. Plant establishment procedures, including a plan for routine care and monitoring of plant materials **will be provided by the project owner to each landowner. The project owner will work with landowners to ensure proper and diligent watering, weeding and maintenance. The project owner will ~~provide for~~** ~~and~~ replace**~~ment of installed~~** plants that fail to thrive for a period of five years from installation**~~, if the landowner has provided proper and diligent watering, weeding, and maintenance~~**; and

*Clean Condition of Certification to **Vis 2 B**.*

Plant establishment procedures, including a plan for routine care and monitoring of plant materials will be provided by the project owner to each landowner. The project owner will work with landowners to ensure proper and diligent watering, weeding and maintenance. The project owner will replace plants that fail to thrive for a period of five years from installation; and

C. Documentation that a landowner declines to have landscape screening installed on his property in the event they choose not to participate in the screening program.

D. The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The screening plan shall be submitted to the CPM for review and approval at least 90 days prior to installation.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM. **The review of any subsequent revisions shall be completed by the CPM within fifteen (15) days of receipt of the revisions.**

The project owner shall notify the CPM within seven days after completing the screening installation that the screening is ready for inspection.

The project owner shall report maintenance activities, including replacement of plants that fail to thrive for the previous year of operation for a period of five years, in each Annual Compliance Report.

VIS-4 The project owner shall develop and implement a screening plan that reduces direct visibility of the SCA mirrors to traffic on Harper Lake Road north of Lockhart Road, to traffic on Lockhart Road from Harper Lake Road to the eastern boundary of the Beta solar field, to residents living within one mile of the west boundary of the Beta solar field, and to visitors of the Harper Dry Lake Watchable Wildlife Area. The plan shall utilize sufficient setbacks of the SCAs from roads

and 10-foot high slatted fencing to eliminate public exposure to hazardous levels of reflection, and to minimize public exposure to nuisance glare. The screening shall be designed to minimize glare from the project as seen by motorists and local residents during all times of year and periods of the day. Fence slats shall be of a non-reflective tan or other color designed to blend with the visual background in order to minimize color contrast of the fence.

The project owner shall submit to the CPM for review and approval a screening plan providing proper implementation that will satisfy these requirements. The plan shall include:

A. A detailed plan at a reasonable scale such that all information is legible, and elevations and/or section drawings showing the relationship of the screening to the road and SCAs from locations on Lockhart Road. The plan, elevations and/or sections shall clearly demonstrate how the glare-reducing requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the screening as early in the construction process as is feasible in coordination with project construction;

B. Maintenance procedures, including a plan for routine annual or semi-annual debris removal and repair of slatted fencing for the life of the project;

C. A procedure for monitoring and replacement of damaged screening for the life of the project; and

D. The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The screening plan shall be submitted to the CPM for review and approval at least 90 days prior to installation.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM. **The review of any subsequent revisions shall be completed by the CPM within fifteen (15) days of receipt of the revisions.**

The project owner shall notify the CPM within seven days after completing the screening installation that the screening is ready for inspection.

The project owner shall report maintenance activities, including replacement of damaged or destroyed screening for the previous year of operation in each Annual Compliance Report.

WASTE MANAGEMENT

Testimony of Ellen Townsend-Hough

Staff is not opposed to the language refinements made to **WASTE-1.** The modifications to **WASTE-1** are refinements and clarifications and do not change the intent of the condition.

WASTE-1 Prior to the removal of **any** ~~the~~ underground storage tanks (USTs) **found on site**, the project owner shall **submit a copy of the information typically required to** obtain a permit **to** ~~from~~ the San Bernardino County Fire Department **for review and comment**. The CPM and the San Bernardino County Fire Department must acknowledge ~~review~~ **receipt** of the plans for the **removal** ~~project~~ prior to ~~permit issuance~~ **CPM approval**. ~~After receiving approval from the CPM,~~ **The** project owner shall obtain ~~a permit~~ **approval** for removal of all **located** USTs **from the CPM**.

Verification: No less than sixty (60) days prior to commencement of site mobilization, the project owner shall provide the plans to remove the underground storage tanks to the CPM for review and approval. The project owner shall inform the CPM via the monthly compliance report, of the data when all USTs were removed from the site.

WORKER SAFETY AND FIRE PROTECTION

Testimony of Alvin Greenberg, Ph.D.

The Applicant, in pre-filed testimony, accepts staff's proposed Conditions of Certification **WORKER SAFETY-1, 2, 3, 7,** and **8** as written by Energy Commission staff.

The Applicant proposes changes to conditions **WORKER SAFETY-4, 5,** and **6**. Staff discusses the proposed changes and provides responses below.

WORKER SAFETY-4

The applicant asks that staff's proposed that **WORKER SAFETY-4** be deleted in its entirety. This proposed condition is a standard condition developed by staff in 2005 as a result of number of focused safety, hazardous materials management, and security audits of existing operating power plants and those under construction. This condition would require the project owner to make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. The Safety Monitor, selected by and reporting directly to the CBO, is responsible for verifying that the Construction Safety Supervisor implements all appropriate Cal/OSHA and Energy Commission Decision safety requirements. As discussed in the Supplemental Staff Assessment (SSA), this Safety Monitor serves an as extra "set of eyes" to ensure worker safety during construction and commissioning.

To date, the CBOs and Energy Commission Compliance Project Manager report good working relationships exist between the Safety Monitors, the Energy Commission Compliance Project Managers (CPMs), and the project owners' Construction Safety Supervisors with no known complaints from the project owners about the tasks and hours of this independent Safety Monitor. The need for a Safety Monitor was recently and tragically underscored by the events on February 7, 2010 in Middlefield Connecticut where it appears that appropriate safety procedures were not implemented and lax safety supervision was found to exist.

Additionally, this condition has been accepted and adopted by the Commission for all power plants licensed since staff proposed it in 2005.

Staff understands that the professionals hired by the project owner to construct, operate, and maintain the Abengoa Mojave Solar power plant are intended to be well-trained in safety procedures. However, given the nature of any industrial construction and the fact that some natural gas will be used and thus present on the site along with over 2.29 million gallons of highly flammable heat transfer fluid, staff strongly recommends that this safety monitor is necessary and prudent.

WORKER SAFETY-5

This proposed condition would require that a portable automatic external defibrillator (AED) is located on site during construction and operation, the applicant does not object to this requirement but questions the **Verification** which requires the project owner to

have the AED on-site 30 days prior to site mobilization. The applicant notes that site mobilization is the first point in time when facilities that could store the AED would exist on the project site. With no facilities or personnel on site prior to mobilization, the applicant requests that the **Verification** require only that the project owner be able to demonstrate to the CPM that the AED exists on site when site mobilization begins and that the "30 days prior" be removed. Staff does not object to this change but points out that this issue may be one of semantic interpretation. Staff uses the term "site mobilization" to refer to the onset of soil movement, not the placing of a construction trailer on the site. Staff thought that at least an administrative trailer would be placed on the site long before earth movement began and that this trailer would be a location where the AED could be placed 30 days prior to site mobilization. If that is not the understanding of the applicant, staff would agree to the suggested revisions as long as an AED is placed in the first office trailer that arrives on site.

WORKER SAFETY-6

This proposed condition would require mitigation of direct and cumulative project-related impacts to the San Bernardino County Fire Department (SBCFD). The applicant is requesting the removal of any dollar amount from the options listed. The applicant claims that the presence of a dollar amount would actually inhibit negotiation with the SBCFD.

Staff is continuing to review of the emergency response needs of the proposed solar power plants which would be located in San Bernardino County. Staff has met with the San Bernardino County Fire Department. Accordingly, staff may file rebuttal testimony on **Worker Safety-6** prior to evidentiary hearings.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *ABENGOA MOJAVE SOLAR POWER PLANT*

Docket No. 09-AFC-5
PROOF OF SERVICE
(Revised 6/8/2010)

APPLICANT
Emiliano Garcia Sanz
General Manager
Abengoa Solar Inc.
11500 West 13th Avenue
Lakewood, CO 80215
emiliano.garcia@solar.abengoa.com

Scott D. Frier
Chief Operating Officer
Abengoa Solar Inc.
13911 Park Ave., Ste. 206
Victorville, CA 92392
scott.Frier@solar.abengoa.com

Tandy McMannes
2030 Addison Street, Suite 420
Berkeley, CA 94704
tandy.mcmannes@solar.abengoa.com

APPLICANT'S CONSULTANTS
Frederick H. Redell, PE
Engineering Manager
Abengoa Solar, Inc.
11500 West 13th Avenue
Lakewood, CO 80215
frederick.redell@solar.abengoa.com

COUNSEL FOR APPLICANT
Christopher T. Ellison
Ellison, Schneider & Harris
2600 Capitol Ave.
Sacramento, CA 95816
cte@eslawfirm.com

INTERESTED AGENCIES
California ISO
E-mail Preferred
e-recipient@caiso.com

INTERVENORS
County of San Bernardino
Ruth E. Stringer, County Counsel
Bart W. Brizzee, Deputy County Counsel
385 N. Arrowhead Avenue, 4th Floor
San Bernardino, CA 92415-0140
bbrizzee@cc.sbcounty.gov

California Unions for Reliable Energy ("CURE")
Tanya A. Gulesserian
Marc D. Joseph
Elizabeth Klebaner
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
E-mail Preferred
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

Luz Solar Partners Ltd., VIII
Luz Solar Partners Ltd., IX
Jennifer Schwartz
700 Universe Blvd
Juno Beach, FL 33408
jennifer.schwartz@nexteraenergy.com

ENERGY COMMISSION
ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JAMES D.BOYD
Vice Chairman and Associate Member
jboyd@energy.state.ca.us

Kourtney Vaccaro
Hearing Officer
kvaccaro@energy.state.ca.us

***Lorraine White**
Adviser to Commissioner Eggert
lwhite@energy.state.ca.us

Craig Hoffman
Project Manager
choffman@energy.state.ca.us

Christine Hammond
Staff Counsel
chammond@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Hilarie Anderson, declare that on June 17, 2010, I served and filed copies of the attached Staff's Rebuttal Testimony. The original documents, filed with the Docket Unit, are accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[http://www.energy.ca.gov/sitingcases/abengoa/index.html].**

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(C*heck all that Apply*)

For service to all other parties:

✓ sent electronically to all email addresses on the Proof of Service list;

✓ by personal delivery;

✓ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

✓ **sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);**

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original Signed by: _____
Hilarie Anderson